

Remarks

Reconsideration of this Application is respectfully requested.

Upon entry of the foregoing amendment, claims 1, 3-10, 13, 18 and 20-23 are pending in the application, with claims 1, 13 and 18 being the independent claims. Claims 2, 11, 12, 14-17, 19 and 24 are sought to be cancelled without prejudice to or disclaimer of the subject matter therein. Claims 1, 3, 9, 10, 13 and 18 are presently amended. These changes are believed to introduce no new matter, and their entry is respectfully requested.

Based on the above amendment and the following remarks, Applicants respectfully request that the Examiner reconsider all outstanding objections and rejections and that they be withdrawn.

Claim Objections

The Examiner has objected to claims 1, 11, 13, 15, 17 and 18 because the term "downstream receivers" as recited in those claims should be changed to "upstream receivers" and the term "upstream receiver" as recited in those claims should be changed to "downstream receiver". Applicants agree with the Examiner with respect to claims 1 and 13, and have amended those claims accordingly. Dependent claims 3, 9 and 10 have also been amended for consistency with independent claim 1, from which they depend. Claims 11, 15 and 17 have been cancelled, thereby rendering the objection to those claims moot. Applicants respectfully disagree with the Examiner with regard to claim 18, which does not include the terms "downstream receivers" or "upstream receiver". In

view of the foregoing, Applicants respectfully request that the objection to claims 1, 11, 13, 15, 17 and 18 be reconsidered and withdrawn.

Rejections under 35 U.S.C. § 103

The Examiner has rejected claims 1-24 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent Application Publication No. 2001/0012293 A1 ("Petersen"). By virtue of the foregoing amendment, claims 2, 11, 12, 14-17, 19 and 24 have been cancelled, thereby rendering the rejection of those claims moot. With respect to remaining claims 1, 3-10, 13, 18 and 20-23, based on the foregoing amendments and the reasons set forth below, Applicants respectfully traverse.

Independent claim 1, as presently amended, is directed to a point-to-multipoint network interface for transferring data packets between a plurality of end user devices and a higher level node. Among other features, the point-to-multipoint network interface of claim 1 includes:

a plurality of upstream receivers, wherein each of said plurality of upstream receivers receives data packets from a respective one of the plurality of end user devices; . . .

a plurality of downstream transmitters . . . for transmission [of individual data packets] to a respective one of the plurality of end user devices; . . .

wherein at least one of said plurality of upstream receivers receives data packets from a particular one of the plurality of end user devices at a different rate than a rate at which one of said plurality of downstream transmitters transmits data packets to the particular one of the plurality of end user devices.

Thus, as set forth in claim 1, the recited point-to-multipoint network interface provides for asymmetric transmit/receive rates in communicating with at least one of a plurality of end user devices. By providing such asymmetric transmit/receive rates (e.g., by

transmitting data packets to an end user device at a higher transmit rate than the rate at which date packets are received from the same end user device), the point-to-multipoint network interface of claim 1 provides distinct advantages as compared to conventional network interfaces, such as conventional Ethernet switches, in which each port has identical transmit and receive rates. *See* Specification at paragraph [0071]. This is particularly true within the context of a point-to-multipoint access network. Some of these advantages are described at paragraphs [0072]-[0074] of the Specification:

The asymmetrical transmit and receive rates of downstream transmitter 1106 and upstream receiver 1108 may be advantageously utilized to decrease the implementation cost of the end user device 304 and the point-to-multipoint interface 302. For example, since the upstream receiver 1108 permits data to be received at a lower rate than data transmitted on the downstream channel, the end user device 304 may be implemented with an upstream transmitter 1112 that transmits at the same rate. For example, the upstream transmitter 1112 may only be required to transmit at a rate of 100 Mbps, as opposed to a 1 Gbps rate utilized in the downstream. This results in a lower implementation cost for the upstream transmitter 1112, and therefore, for the end user device 304.

Additional cost savings may be realized on the end user side. For example, where the upstream and downstream links 1102 and 1104 are implemented using multi-mode optical fiber, the upstream transmitter 1112 may be implemented using a light-emitting diode (LED) for transmitting data to the point-to-multipoint interface 302. In such an implementation, data rates of up to 100 Mbps may be achieved in the upstream channel. Were higher data rates required, an LED implementation would be unacceptable and a substantially more expensive laser-based implementation would be required.

Furthermore, because a lower upstream transmission rate is supported by the point-to-multipoint interface 302, the memory requirements for the upstream channel of the point-to-multipoint interface 302 may be reduced, resulting in cost savings. For example, because a lower upstream transmission rate is supported, the receive buffers 506a-506n, the packet memory 610, and the transmit buffer 518 described above in reference to FIGS. 5 and 6 may be implemented using smaller components with less storage capacity than if the transmission rate in the upstream were the same as the higher downstream rate.

Petersen nowhere teaches or suggests a point-to-multipoint network interface that transmits data packets to an end user device at a different rate than the network interface receives data packets from the same end user device. Petersen is directed to a system that multiplexes voice and non-voice data into a single data stream and transmits it over a publicly switched telephone network (PSTN) using a minicell format specified by the ATM adaptation technique referred to as AAL2. *See, e.g.*, Petersen at paragraphs [0025]-[0027]. The Examiner equates the multiplexer 203 shown in FIG. 5 of Petersen and the demultiplexer 213 shown in FIG. 6 of Petersen to the recited point-to-multipoint network interface of claim 1. However, Petersen nowhere teaches or suggests that multiplexer 203 or demultiplexer 213 communicates with a single end user device using different transmit/receive rates.

Since Petersen does not teach or suggest each and every limitation of claim 1, as presently amended, it cannot render that claim obvious. Dependent claims 3-10 are likewise not rendered obvious by Petersen for the same reasons as claim 1 from which they depend and further in view of their own respective features. Accordingly, Applicants respectfully request that the rejection of claims 1 and 3-10 under 35 U.S.C. § 103(a) be reconsidered and withdrawn.

Independent claim 13 is directed to a point-to-multipoint network interface for transferring data packets between a plurality of end user devices and a higher level node. As presently amended, the point-to-multipoint network interface of claim 13 also provides for asymmetric transmit/receive rates in communicating with at least one of a plurality of end user devices. As noted above, Petersen does not teach or suggest this feature. Thus, Petersen does not render obvious claim 13. Accordingly, Applicants

respectfully request that the rejection of claim 13 under 35 U.S.C. § 103(a) be reconsidered and withdrawn.

Independent claim 18 is directed to a method for transferring data packets between a plurality of end user devices and a higher level node in a network. Among other features, claim 18 recites "wherein data packets are received from at least one of the plurality of end user devices at a different rate than individual data packets are selectively transmitted to said at least one of the plurality of end user devices." For the reasons set forth above with regard to independent claims 1 and 13, Petersen neither teaches nor suggests this feature. Thus, Petersen does not render obvious claim 18. Dependent claims 20-23 are likewise not rendered obvious by Petersen for the same reasons as claim 18 from which they depend and further in view of their own respective features. Accordingly, Applicants respectfully request that the rejection of claims 18 and 20-23 under 35 U.S.C. § 103(a) be reconsidered and withdrawn.

Conclusion

All of the stated grounds of objection and rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider all presently outstanding objections and rejections and that they be withdrawn. Applicants believe that a full and complete reply has been made to the outstanding Office Action and, as such, the present application is in condition for allowance. If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided.

Prompt and favorable consideration of this Amendment and Reply is respectfully requested.

Respectfully submitted,

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Date: 10/13/05

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